REMARKS

The status of claims 1-62 are listed, with claims 1-6 being the claims listed in U.S. patent 5,812,860 and claims 7-8 and 10-13 having been added. Note that claims 14-37 were canceled in the response dated March 27, 2003. Claims 9, 41-45 and 56-58 were canceled in the response dated August 2, 2005. Claims 38-40, 46-55 and 59-61 were canceled in the response dated December 15, 2005. Claim 62 has been added per this response and includes the subject matter of the previously submitted, and incorrectly numbered, claim 9 in the response dated December 15, 2005. Thus, only claims 1-8, 10-13 and 62 are pending in this reissue application.

Support in the specification for claim changes

The Office Action states that the support for changes made to claims 7-8 and 10-13 should be pointed out in the specification.

Applicants' claim 7 recites a memory and a processor having a processor core coupled through a pad ring to the memory. These features of the memory, processor core and pad ring are clearly illustrated in FIG. 1. Claim 7 further recites that the processor includes an operating system to monitor an application mix to determine a frequency and a voltage at which the core of the processor can operate in executing the application mix. The specification supports this portion of Applicants' claim 7 in column 4, lines 32-41, that allows the operating system to accumulate the processor needs for active applications. The operating system then directs a state machine to transition into a state which as closely as possible matches the frequency and voltage to the application mix currently accessed in the processor core. Claim 7 further recites that the pad ring operates at a constant voltage. The specification supports this portion of Applicants' claim 7 in column 2, line 62 and continuing to column 3, line 9, that provides support for the processor core operating with a core voltage Vcc_{core} and the pad ring operating with a second voltage Vcc_{pad}. The feature of the pad ring operating with a voltage that is separate from the core is also illustrated in FIG. 1.

Applicants' claim 8 recites a voltage regulator adapted to provide an idle voltage potential level and a peak voltage level. Support for Applicants' claim 8 may be found in column 3, lines 35-47, that states a voltage regulator supports an idle voltage and a peak voltage.

Applicants' claim 10 recites that the operating system directs a state machine to set a minimum voltage potential level at which the processor operates. This feature of Applicants' claim may be found in column 4, lines 12-23.

Applicants' claim 11 recites that a clock signal generator provides a clock signal of at least two frequencies. This feature of Applicants' claim may be found in column 3, lines 35-47.

Applicants' claim 12 recites determining active applications being executed within a processor as monitored by an operating system. This portion of Applicants' claim is supported in column 4, lines 32-41. Applicants' claim 12 further recites matching a frequency and a voltage potential to the active applications accessed in the processor. This portion of Applicants' claim is supported in column 4, lines 34-37. Applicants' claim 12 further recites directing a state machine to enter a state in which the frequency and the voltage potential are set to at least a portion of the processor in accordance with the active applications. This portion of Applicants' claim is also supported in column 4, lines 34-37. The processor having separate portions that may receive a frequency and voltage potential is supported in column 2, line 62 and continuing to column 3, line 9.

Applicants' claim 13 recites changing the frequency and voltage potential in response to a change in the active applications executing in the processor. Applicants' claim 13 is supported in the specification in column 3, lines 48-65.

Applicants' claim 62 recites a state machine responsive to the operational load of the processor core. Support for this claim may be found in column 4, lines 42-54.

Proper reissue format for the claims

The Office Action states that the claims are not in the proper reissue format. The claims added by reissue, e.g., claims 7-8 and 10-13, have been underlined in their entirety without indication being made to point out any changes being made since the last amendment. All bracketing is reserved to denote deletion of claim language that was present in the patent as it issued that is being deleted by reissue.

Status indicators for the claims

The Office Action states that the status indicators given for the claims are not correct. The status for each of the claims has been corrected according to 37 CFR 1.173(b)(2) to reflect previously presented amendments. Claims 1-6 being the claims listed in U.S. patent 5,812,860 are provided a status of original, while claims 7-8 and 10-13 having been added by reissue are marked with a status that reflects the number of times that claim was amended.

Claim 9

The Office Action states that previously canceled claim 9 cannot be reinstated. Accordingly, claim 9 has been indicated as canceled and the subject matter of this previously added claim has been included as new claim 62.

Response to the defective reissue oath/declaration

The Office Action states that the reissue oath/declaration filed with this application is defective in that it failed to refer to all of the amendments made in the application since it was filed. By canceling all claims added by amendment after the reissue oath/declaration was filed, and only prosecuting the claims 7-13 added in the preliminary amendment submitted with the reissue oath/declaration and signed by the three co-inventors, it is believed that the reissue oath/declaration filed September 22, 2000 is proper. That reissue oath/declaration declares on page 3 that the original patent was wholly or partially inoperative and the reasons were cited.

Response to the claim rejection

The Office Action states that claims 7-13 and 38-61 are rejected under 35 U.S.C. §251 as being an improper recapture of broadened claimed subject matter surrendered in the application for the patent upon which the present reissue is based.

It is Applicants' belief that the broadening aspect of the claim language in the claims 7-8, 10-13 and 62 relates to subject matter that has not been surrendered during the prosecution of the application. It is believed that the claims include the limitations relied upon to overcome the prior art rejection in the patent. Claims 38-61 have been canceled.

Claim rejections – 35 USC §102(b)

The Office Action states that claims 12, 13, 38-43, 56 and 57 are rejected under 35 U.S.C. §102(b) as being anticipated by Beard (5,627,412). Applicants' claims 38-43, 56 and 57 have been canceled without prejudice in this response and the rejection of these claims is now moot.

Applicants' independent claim 12 as amended recites determining active applications being executed within a processor as monitored by an operating system; matching a frequency and a voltage potential to the active applications accessed in the processor; and directing a state machine to enter a state in which the frequency and the voltage potential are set to at least a portion of the processor in accordance with the active applications.

Beard teaches in column 4, lines 12-15, that the power level specified as 2.7volts, 3.3 volts or 5.0 volts operation may be selected by the user, or alternatively, monitored by a "fuzzy logic routine" to manage the power supply system. Fuzzy logic is defined in industry as a type of logic that recognizes more than simple true and false values. With fuzzy logic, propositions can be represented with degrees of truthfulness and falsehood. Instead of fuzzy logic, Applicants' claim that an operating system monitors an application mix being executed within the processor and that a state machine directs a state in which the frequency and the minimum voltage potential are set. This portion of Applicants' claim 12 that utilizes the operating system to monitor an application mix and a state machine to direct a state to set a processor voltage is not anticipated by Beard, and therefore, these features of Applicants' claim are believed allowable over the prior art reference of record.

Applicants' claim 13 depends from base claim 12 and is believed allowable over the art of record for at least the same reasons as base claim 12.

Claim rejections – 35 USC §103(a)

The Office Action states that claims 7-11, 44, 45, 49-52 and 59-61 are rejected under 35 U.S.C. §103(a) as being unpatentable over Beard (5,627,412). Applicants' claims 44, 45, 49-52 and 59-61 have been canceled without prejudice in this response and the rejection of these claims is now moot.

Applicants' independent claim 7 as amended recites, among other things, a processor having a processor core coupled through a pad ring to the memory. Claim 7 further recites an operating system to monitor an application mix to determine a frequency and a voltage at which the core of the processor can operate ... while the pad ring operates at a constant voltage.

Beard teaches in column 4, lines 1-14, that a CPU 18 may execute in a low power mode with the processor operating at 2.7 volts, a higher speed mode with the processor operating at 3.3 volts, or yet a higher speed mode with the processor operating at 5.0 volts. Beard states that the power levels may be user selectable or may be monitored and controlled by a fuzzy logic routine which manages the power supply system in the background of operations of the processor.

Whereas Applicants claim a processor core operating at a voltage set by an application mix and a pad ring that operates at a constant voltage, Beard does not separate the processor core voltage domain from the pad ring voltage domain. Accordingly, Beard cannot teach Applicants' claimed feature of operating the pad ring at a constant voltage that is independent of the voltage of the processor core.

Further, Applicants claim recites that the operating system monitors an application mix to determine a frequency and a voltage at which the core of the processor can operate, whereas Beard delegates setting the CPU voltage as a task for the user or as a task for "fuzzy logic" operating in the background of operations of the processor. Again, Beard does not teach or suggest Applicants' claimed feature of using the processor operating system to determine an application mix that determines a frequency and a voltage at which the core of the processor can operate.

Accordingly, the prior art reference of Beard is deficient in teaching or suggesting the features of Applicants' claim 7 and the rejection based on that reference should be withdrawn. Applicants' claims 8, 10-11 and 62 directly depend from base claim 7 and are believed allowable over the art of record for at least the same reasons as base claim 7.

Conclusion

The foregoing is submitted as a full and complete response to the Office Action mailed February 14, 2006, and reconsideration of the rejections is requested. It is submitted that claims 1-8, 10-13 and 62 are now in condition for allowance and allowance of these claims in this reissue application is earnestly solicited.

Should it be determined that a fee is due under 37 CFR §1.16 or 1.17, or any excess fee has been received, please charge that fee or credit the amount of overcharge to deposit account #50-0221.

If the Examiner believes that there are any informalities that can be corrected by an Examiner's amendment, a telephone call to the undersigned at (480) 715-5388 is respectfully solicited.

Respectfully submitted,
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